

REMARKS

Claim 8 having been withdrawn from consideration, Claims 1 through 7 are now presented for examination. Claim 1 has been amended to define still more clearly what Applicant regards as his invention, in terms which distinguish over the art of record. Claim 1 is the only independent claim.

Reconsideration and withdrawal of the outstanding rejections are respectfully solicited in view of the foregoing amendments and the following remarks.

Claims 1-6 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,141,596 (Hawkins et al.). Claim 7 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hawkins et al. With regard to the claims as currently amended, these rejections are respectfully traversed.

Claim 1 relates to a method for making a through-hole in a silicon substrate comprising the steps of forming a high-impurity-concentration region at a first surface of the silicon substrate that continuously surrounds the periphery of a through-hole-forming region, forming an etching stop layer over the through-hole-forming region and the high-impurity-concentration region, forming a mask layer having an opening on a second surface of the silicon substrate, the second surface being opposite to the first surface, etching the silicon substrate at the opening through the mask layer until the etching stop layer is exposed to the second surface, further etching the silicon substrate until the etched portion extends to the high-impurity-concentration region, and removing the etching stop layer at least at the portion exposed to the second surface.

Claim 1 has been amended to recite that the step of forming a high-impurity-concentration region at a first surface of the silicon substrate is performed so as to continuously surround only the periphery of a through-hole-forming region.

Claim 1 has also been amended to recite that the step of etching the silicon substrate at the opening through the mask layer until the etching stop layer is exposed to the second surface is performed while the high-impurity-concentration region is not exposed to the second surface, and subsequently, further etching of the silicon substrate is performed until the etched portion extends to the high-impurity-concentration region.

In contrast, the patent to Hawkins et al. is not understood to disclose or suggest the step of forming a high-impurity-concentration region at a first surface of the silicon substrate that continuously surrounds only the periphery of a through-hole-forming region, as recited by amended Claim 1. In addition, the Hawkins et al. patent is not understood to disclose or suggest the step of etching the silicon substrate at the opening through the mask layer until the etching stop layer is exposed to the second surface, while the high-impurity-concentration region is not exposed to the second surface, and subsequently, further etching the silicon substrate until the etched portion extends to the high-impurity-concentration region, as also recited by amended Claim 1. Rather, the Hawkins et al. patent is understood to merely disclose that a boron-doped patterned etch stop 30 (which the Office Action identifies as corresponding to the claimed high-impurity concentration region) exists over the entire surface of a plate or wafer 32 (which the Office Action identifies as corresponding to the claimed substrate). In addition, this patent is understood to merely disclose that the boron-doped patterned etch stop 30 is already exposed to a second surface at a step in which etching

of an etch resistant layer 36 (which the Office Action identifies as corresponding to the claimed etching stop layer) is finished.

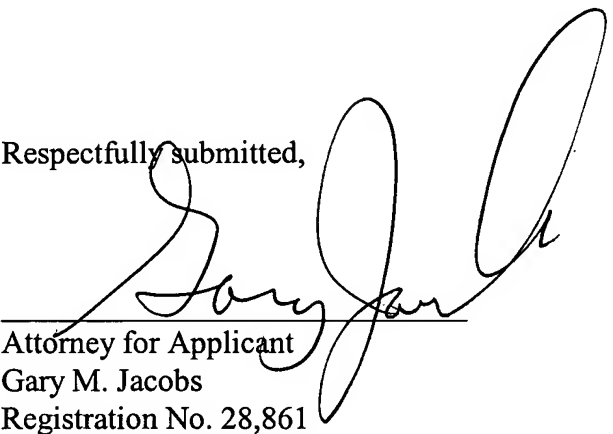
Since the Hawkins et al. patent is understood to fail to disclose or suggest at least two features of amended Claim 1, amended Claim 1 is not understood to be anticipated by the Hawkins et al. patent. Therefore, Applicant respectfully requests that this rejection be withdrawn.

The other claims presented for examination are each dependent from independent Claim 1 and are therefore believed patentable for at least the same reasons. Since each of these dependent claims is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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